December 1, 2003

Stuart Lynde
Environmental Services & Consulting
101 Professional Park
Blacksburg, VA

Re. Draft Benthic TMDL Development for Stroubles Creek, VA

Dear Mr. Lynde:

Thank you for your email regarding the Stroubles Creek TMDL Study. I appreciate you attending the public meeting and raising questions about the TMDL study; your participation has added much value to the TMDL process. I look forward to your continued participation during the implementation process, where your expertise will be needed.

There were many questions in the email you sent to DEQ and I have attempted to provide detailed answers to each of these concerns in a question and answer format. Please contact me at (540)-562-6724 if there are anymore questions.

Sincerely,

Jason R. Hill
Regional TMDL Coordinator

cc: Mike Shelor, Department of Conservation and Recreation
Dave Lazarus, Department of Environmental Quality
Gene Yagow, Virginia Polytechnic Institute and State University

Comment: Impairment is listed from downstream of the Duck Pond based on data collected below the dam of the duck pond. What data if any has been collected above the duck pond.

Response: The only biological and chemical data, that VDEQ knows about, in streams above the duck pond is collected by the Natural History Museum of Virginia Tech. Using Save Our Streams (SOS) methodologies this group collects data at several stations above the duck pond every year. Llyn Sharp, one of the group members, that collects this data took VDEQ and Virginia Tech on a tour of the watershed above the duck pond. The SOS biological data in streams above the duck pond show a stressed community. However, VDEQ does not list streams based on data collected by citizens monitoring groups. That is why the 'aquatic life use impairment' line ends at the duck pond. VDEQ will only list a stream based on a biological assessment done by regional biologists or government agency using comparable assessment. However, TMDL studies take into account the whole watershed and addresses the water quality impacts that occur above the duck pond.

Comment: In the second public meeting it was stated that toxics were eliminated as a possible source of impairments based on a single set of aqueous phase toxicity tests conducted on one date. Additional toxicity testing (either aqueous of sediment phase) was not conducted due to the cost of testing. (Comments by Jason Hill, VDEQ) Chemical monitoring did not include the any toxic specific measurements. Biological monitoring did not include any measure for toxic with the exception of a single aqueous phase test. With the anecdotal history of inputs into the tech duck pond from sources related to Tech facilities, it seems only logical that the potential for toxics effects might be present. It is inadequate to dismiss toxics as a stressor, without some data to suggest otherwise.

Comment: There is anecdotal accounts of discharged from VT facilities into Stroubles Creek above the duck pond. Additional anecdotal accounts of buried material located near the architecture buildings. In the mid 90's there was a diesel oil spill into Stroubles creek that required extensive cleanup. Upslope of Stroubles near the duck-pond is the VT golf course. I am sure this facility uses fertilizers and herbicides to maintain facilities. How can we dismiss toxics? What contaminants were measured?

Comment: It appears that it should say that FHM results were different from the controls, however not significantly. What about fathead minnow survival? Where is the data? No data is presented in the report for review.

Response: *Note, I have grouped these toxic comments together and addressed the comments in one response.* It is difficult to dismiss toxics as a stressor in an urban watershed where episodic toxic events can be occurring without appearing in the data collected by VDEQ. However, due to monetary and time constraints, multiply water column toxicity tests are not possible in a TMDL study. During the first meeting, Department of Biological Systems Engineering (BSE) went through the logic of dismissing toxics as a stressor and showed the metals and organics data collected by VDEQ. None of this data raised any red flags. Admittedly, the toxics data provided to BSE by VDEQ for the stressor analysis was limited. I would be happy to provide you a spreadsheet with the toxics data used in the stressor analysis (it is available via the VDEQ water quality monitoring website), and a copy of the EPA water column toxicity study, which includes all the data and statistical results.

Comment: These two groups of insects to respond to organics/nutrients as possible stressors, however they also more pollution tolerant groups and respond in the same manner as other groups decline. As in the case of the presence of toxics.

Response: Yes, it is true that *Hydropsychidae* and *Chironimidae* are two of the more pollution tolerant families. More detailed identification (genus level) could provide better insight into if it's more of a sediment problem, nutrient problem, or a toxics problem. However, since the metals/organics data and water column toxicity tests did not indicate a 'red flag'; BSE, VDEQ, and VDCR used the available data to evaluate stressors that appeared in the data set.

Comment: Nutrients and Organic matter, listed possible stressors, may travel downstream as either sorbed materials on sediment, or as dissorbed materials in the water column. Modeling for only sediment load does not take into account the other possible forms associated.

Response: Nutrients and organic matter were listed as 'possible' stressors. In the end, only sediment was modeled in the 'impaired' Stroubles Creek watershed and compared to the load in the 'reference' Toms Creek watershed. You are correct in stating that sorbed nutrients and dissorbed materials in the water column were not addressed in this study. During the course of this study, it was determined the weight of evidence linking sediment as the primary stressor was VDEQ strongest case. VDEQ believes that excess sediment loading in the watershed can be used as surrogate to solve multiple water quality problems in the Stroubles Creek watershed. VDEQ believes nutrients, organics, altered hydrology, degraded habitat and eposidic toxic urban runoff all contribute to the impairment in Stroubles Creek. However by reducing the sediment loading in the watershed, we should find less organics, nutrients, and toxics in the watershed. The bast management practices put in the watershed should improve habitat and working with the Town of Blacksburg through the MS4 permit we hope to damper the flashiness of Stroubles Creek.

Comment: Primary streambank erosion (ie those associated with reduction in riparian cover, increased runnoff, animals grazing and access to streams) in this system is below the initial point of impairment as listed. Sediment transport in the upper watershed is limited from moving past the duckpond as it, and a series of other wet, and dry, ponds act to retain sediment from the upper watershed.

Response: There is a series of wet and dry ponds that act to retain stormwater runoff. However, it is doubtful that current urban best management practices retain all the sediment load upstream of the duck pond.

Comment: Stroubles was listed because it failed to meet the general standard when compared to a reference watershed. The watershed used was Sinking Creek. All the historical benthic data collected by DEQ compared to this watershed. It is inappropriate to change at this point. In the second public meeting, the rational for changing reference stations was given that Toms Creek compared to the Sinking Creek reference station, and had a Land Use more similar to Stroubles Creek. The range for comparable streams is large (80 -100%) when using when using the RBP II methodologies. No data is presented to show that the two systems are closely related. The reality is that this two 'reference' system may differ by fairly large amounts. Changing reference systems is akin to lowering the bar in the assessments that followed. In fact, had DEQ originally used the Tom's Creek as a reference condition for

the benthic studies. Strouble's creek may have been a candidate for delisting, since it scored as moderate only once in 2002/2003.

Response: It is true that VDEQ used Sinking Creek as the original reference site to call Stroubles Creek impaired (using the Rapid Bioassessment Protocals (RBP) methodology). However, during the last few years the regional biologist began to look for more comparable reference sites to compare streams like Crab Creek and Stroubles Creek. Sinking Creek is a large 4th order stream with almost no urbanization in the watershed. At the new reference Toms Creek is a 2nd order stream with more comparable habitat and watershed size.

Stroubles Creek was never a candidate for de-listing. The EPA looks at Virginia's new Stream Condition Index (SCI) to de-list biological impairments. The Stream Condition Index is a new multimetric approach that was developed from Virginia's biological database (EDAS). Reference condition in the mountains and the piedmont were screened using a reference matrix of water quality and habitat conditions. These reference conditions were then analyzed to determine which metrics best discriminated between reference and impaired conditions. This is a short description of Virginia's new SCI, and to look at the details and data analysis, VDEQ could provide the full report. The average SCI score on Stroubles Creek is 37.9. The max score of 51.2 is not high enough to de-list. The EPA need two consecutive scores above the 10th percentile of 61.3 to de-list a stream. It should be noted that the average SCI score at Toms is only 5 points below Sinking Creek's SCI average.

Comment: Note Given the inherent variability of biological systems, the change in reference conditions leading to an overall impairment, and the lack of data to calibrate the chosen model, the Margin of Safety appears low. In this case I would suggest a MOS of somewhere in the neighborhood of 20%.

Response: Biological systems are variable, but so are other systems that VDEQ models, such as bacteria loading in watersheds. The EPA guidance recommends using a MOS of 10% when setting TMDL limits.

Comment: Note MS4 program is currently a voluntary program. If it is incorporated into the TMDL and requires a reduction as indicated in both alternatives. Does this not mean that the MS4 program for this watershed is no longer a voluntary program and becomes required.

Response: The Nation Pollution Discharge Elimination System (NPDES) Stormwater Phase II program (MS4 program) is not a voluntary program. All urban areas over 10,000 people must get a stormwater permit from VDEQ. The requirements of the MS4 program at present are very small, but not voluntary. The municipality must located and map stormwater outfalls and conduct education outreach. The MS4 program could evolve in future to include limits. The TMDL implementation plan requirements are voluntary.

Comment: It is difficult at best to read the Assessment ratings for several on the final assessments. Since the assessment ratings are the basis for requiring the TMDL, this item should be readable.

Response: Table 3.2 is difficult to read, we will need to correct this table in future reports.

Comment: If the expected evaluation was not done, how can it receive an assessment of very poor?

Response: Table 3.3 contains a typographical error and needs to be corrected.

Comment: Habitat scores in general are very subjective ratings. No habitat ratings are presented for the reference on Sinking Creek. Habitat parameters for Tom's creek are about 20% higher than Strouble's creek averages habitat scores. Attainment of comparable assessments may not be possible without habitat modifications including, increases in riparian vegetation in addition controlling sediment.

Response: Sinking Creek habitat was not included because it was not selected as the reference watershed for the TMDL study. For reasons explained above, Toms Creek was used as the reference watershed. VDEQ agrees that increased habitat modification such as increased riparian vegetation is necessary for improved aquatic habitat in Stroubles Creek.

Comment: No volunteer monitoring data presented, even though the researchers are aware that volunteer monitoring data exists. Why was it excluded?

Response: VDEQ and Virginia Tech were aware of the volunteer monitoring data and talked with members of the volunteer monitoring group. VDEQ does not list all data evaluated in TMDL reports, however we would be happy to provide you with the volunteer data.

Comment: These data do suggest sediment is an issue, but the station is too far downstream to adequately assess the areas below just below the duck pond. It is difficult at best to assess the needs of this system from a single monitoring point. The researchers should have established additional monitoring stations for at least the two years funded. As far as this reader can tell, there is no way to adequately assess the watersheds current condition, or future improvement.

Response: VDEQ agrees that more data to characterize TMDL watersheds would be invaluable. Again, VDEQ only has so much time and money for each TMDL study. Future improvement in the watershed can and will be measured at historical sampling stations.

Comment: What rational is given for not collecting some flow data?

Response: Flow data was largely unavailable for Stroubles Creek and Toms Creek. VDEQ has one field flow field team and it is impossible to get flow data for all ongoing TMDL studies. The GWLF model can operate without flow data and is designed to work in an ungaged watershed. The reality is that most streams and rivers do not have adequate flow information.

December 1, 2003

Meredith Tremel
Town Engineer
Blacksburg, VA

Re. Draft Benthic TMDL Development for Stroubles Creek, VA

Dear Ms. Tremel:

Thank you for your email regarding the Stroubles Creek TMDL Study. You make a valid point about the MS4 program in the email you sent to DEQ and I have attempted to provide an answer to your concerns. Please contact me at (540)-562-6724 if there are anymore questions. Thank you for your participation and I look forward to working with you on the implementation plan.

Your email states several times: "*I am extremely concerned that the study is putting all of its hope into the Town's MS-4 plan to achieve a 50% reduction in sediment loadings on Stroubles Creek in the impaired section*." This is a valid concern, VDEQ believes that water quality improvements in the Strouble Creek watershed will improve with better urban stormwater management practices. Virginia Tech researchers and VDEQ are aware that presently the MS4 program is in its infancy. Currently, the MS4 requires the stormwater outfall locations and for community environment outreach/education efforts by the local government. However, by performing this TMDL study and identifying problems in the Strouble Creek watershed, VDEQ and VDCR has begun the process of seeking Best Management Practices (BMPs) monies. The next step in the process is to design an implementation plan to determine what needs to happen on the ground and what BMPs can be installed with the funding available. This process will not happen overnight and it will take many years to improve water quality in Stroubles Creek. By going through the complete TMDL process, we have opened up grant opportunities for improving water quality in the Stroubles watershed.

Until we have additional state and federal monies to offer and the implementation plan in place, the community outreach and education efforts are invaluable. A recent stormwater study in Detroit found that current structural BMPs alone in an urban watershed would not be enough to meet water standard for nine criteria pollutants. The researchers found urban areas need actual load reductions of pollutants, which involves educating homeowner's on acceptable clean water behaviors in the watershed. The job of educating citizens is very important and I would be happy to help Blacksburg with their outreach effort. In Roanoke City, I know their stormwater educator and she is a great local resource. Also, in Botetourt County I sat on a panel the local government put together to educate citizens on their local environmental problems. I look forward to working with you in the future.

Sincerely,

Jason R. Hill
Regional TMDL Coordinator

cc: Mike Shelor, Department of Conservation and Recreation
Dave Lazarus, Department of Environmental Quality
Gene Yagow, Virginia Polytechnic Institute and State University

Email comments from Meredith Tremel:

Jason,

Sorry this finds you late, I was out of Town from last Thursday until now. I do have some input on the TMDL process and plan thus far.

I am extremely concerned that the study is putting all of its hope into the Town's MS-4 plan to achieve a 50% reduction in sediment loadings on Stroubles Creek in the impaired section. First of all, this is an unfunded mandate. The Town Council has instructed me to formulate an MS4 plan that does not spend money. Furthermore, the current plan for Blacksburg, which has been approved by DEQ, does not "retrofit" existing development for runoff quantity or quality. THe plan focuses heavily on new development and illicit discharge detection. These will not affect the sediment loadings very much in the Stroubles Creek Basin because it is developed already, urban as you know. Therefore, I am very concerned about DEQ "hanging it's hat" on the Town's 50% reduction rate due to MS4. I don't think it's going to happen. Furthermore, there is only so much "good housekeeping" in the sixth measure of the program, that we can do with no funding to increase our efforts above what they are now.

All in all, I do think that sediment is probably our largest problem, and I do think that quantity of water in this basin contributes heavily to the amount of sediment in the stream. BUT, the MS4 project in this urbanized basin, as it has been approved for Blacksburg currently, with no funding, WILL NOT be able to reduce the TMDL loadings by 50%. That is my fear.

I think it is perfectly reasonable for DEQ to find that sedimentation basins, or stormwater quantity basins, or urban stream revitalization are appropriate fixes. These are things I'd rather see, and I know they cost money. To my knowledge, unless you gave Gene Yagow our stormwater phase II MS4 plan, he hasn't seen it to know what is in it. Because the items in it, are not aimed at reducing sediment loads in Stroubles Creek.

Sorry again that this is late, but I feel it is very important to voice to you my fear that this TMDL will not be reached with a 50% reduction goal relying on an MS4 plan.

Thanks. Please email me or call me if you have questions concerning my comments. 540-961-1126.

-Meredith Tremel, Town Engineer for Blacksburg, VA